(11) $7, 14, 28 \ldots$ 10th $\quad S_{10} = \frac{7(1-1024)}{-1} = 7(1023)$

(12) $-\frac{1}{2}, \frac{3}{10}, -\frac{9}{50} \ldots 5$ $\quad S_5 = \frac{-\frac{1}{2}\left(1+\frac{243}{3125}\right)}{1+\frac{3}{5}} = \left(\frac{\frac{6050}{3125}}{\frac{8}{5}}\right) \cdot \frac{5}{6250} = \frac{1}{1250}$

(13) $-4, -2, -1 \ldots 12$ $\quad S_{12} = \frac{-4(1-4096)}{-1} = -(16380)$

(16) $\sum_{k=1}^{6} \left(\frac{2}{3}\right)^{k+1}$ $\quad 6$ $\quad r = \frac{1}{4} \cdot \frac{2}{3}$ $\quad r = \frac{2}{3}$ $\quad S_6 = \frac{\frac{4}{9}\left(1-\frac{64}{243}\right)}{\frac{1}{3}} = \frac{4}{3}(179) = \frac{716}{3}$

(14) $\sum_{k=2}^{6} \left(\frac{1}{10}\right)^k$ $\quad 6$ $\quad a = \frac{1}{100}$ $\quad r = \frac{1}{10}$ $\quad S_6 = \frac{\frac{1}{100}\left(1-\frac{1}{1000000}\right)}{\frac{9}{10}} = \frac{\frac{1}{10}\left(\frac{999999}{1000000}\right)}{9}$

$S_{10} = \frac{(1-32)}{1-\sqrt{2}} = \frac{-31}{1-\sqrt{2}}\frac{(1+\sqrt{2})}{(1+\sqrt{2})} = \frac{-31-31\sqrt{2}}{1-2} = 31+31\sqrt{2}$

$\frac{(1-32\sqrt{2})}{1-\sqrt{2}}\frac{(1+\sqrt{2})}{(1+\sqrt{2})} = \frac{1-32\sqrt{2}+\sqrt{2}-64}{-1}$

$\frac{63+31\sqrt{2}}{1}$

(18) $\frac{1}{4} + \frac{1}{4^2} + \frac{1}{4^3} \ldots$

(20) $\frac{9}{10}, \frac{9}{100}, \frac{9}{1000} \ldots$

20 &

(8) $E = \frac{4.0\times10^{-3}N}{8\times10^{-5}C} = 50 N/C$

(9) $1.25 N/C = \frac{x}{5\times10^{-5}}$ $F = 10^{-3} N$

(1) $V = 800 V/C \cdot .5m = 400 V$

(2) $2000 V/C \cdot .03m = 60 V$

(4) $200 V/C \cdot .008m = 25000 V$

P=V (10) $120v \times .5A$ (11) $90v \times 2A$ (14) $120v / 75W$ (15) $60v\ 2A\ ^{5}_{min}$

(16) $24v\ 4\Omega$, T in 10 min

644 / 39-46 odd

Alex Gaynor

15th term $(a+b)^{16}$ $\binom{16}{14}a^2b^{14} = 120a^2b^{14}$

41) 100th in $(1+x)^{100}$ $100(1\cdot x^{99}) = 100x^{99}$

43) coefficient of term w/ a 4 in $(\sqrt{a}-\sqrt{x})^{10}$ 8th term $\binom{10}{7} = \frac{10\cdot 9\cdot 8}{3\cdot 2} = 120$

45) coeff of term w/ y^8 in $(x/2-4y)^9$ 9th term $\binom{9}{8} = 9$

$= 294912x^1y^8$

47) coef of term w/ x^6 in $(x^2+\frac{6}{x})^{12}$

$n-2r-2=6$

$12-2r=4$

$8=2r$ $r=4$ $\binom{12}{3} = 6$

49) Find term not w A in $(\frac{1}{A}+3A^2)^{12}$

$12-2r-2=0$

$2r=10$

$r=5$ 120

6561

1,1096

3, 11, 21, 29-30, 35

Alex Sazyrova

(3) $(a+b)^9 = a^9 + 9a^8b + \frac{9\cdot 8}{2}a^7b^2 + \frac{9\cdot 8\cdot 7}{3\cdot 2}a^6b^3 + \frac{9\cdot 8\cdot 7\cdot 6}{4\cdot 3\cdot 2}a^5b^4 \ldots$

$\frac{9\cdot 8}{2} = 36 \qquad \frac{3\cdot 8\cdot 7}{3\cdot 2} = 84 \qquad \frac{9\cdot 8\cdot 7\cdot 6}{4\cdot 3\cdot 2} = 126$

(9) $(x^2+y^3)^5 = x^{10} + 5x^8y^3 + 10x^6y^4 \ldots$

$\frac{5\cdot 4}{2} = 10$

(21) $(\sqrt{2}-1)^3 = \sqrt{2}^3 + 3(\sqrt{2}^2)(-1) + 3(\sqrt{2})(1) - 1 = 2\sqrt{2} - 6 + 3\sqrt{2} - 1 = 5\sqrt{2} - 7$

(29) $5! = 5\cdot 4\cdot 3\cdot 2 = 120$

(30) $3! + 2! = 6 + 2 = 8$

$(3+2)! = 5! = 120$

(35) $\frac{(n+2)!}{n!} = (n+2)(n+1) = n^2 + 3n + 2$

(2) $(3x - y^3)^9 = \binom{9}{0}(3x)^9 - \binom{9}{1}(3x)^8(y^3)^1 + \binom{9}{2}(3x)^7(y^3)^2 - \binom{9}{3}(3x)^6(y^3)^3 + \binom{9}{4}(3x)^5(y^3)^4$

$- \binom{9}{5}(3x)^4(y^3)^5 + \binom{9}{6}(3x)^3(y^3)^6 - \binom{9}{7}(3x^9)^2(y^3)^7$

$36(9x^2y^{21}) - 324x^2y^{21}$

SPARE WOOD FOLLOWER BLOCK 5" Long

Alex Lozupone

① $a_4 = 4$ $a_6 = 6$ $\frac{4}{x} = \frac{x}{6}$ $r = -$ find a_5

$x^2 = 24 = 0$ $x = 2\sqrt{6}$

$a_5 = -2\sqrt{6}$

⑤ a_{100}; $-1, 1, \ldots$ $a = -1$ $r = -1$ (duh!)

$-1 \cdot -1^{99} = -1 \cdot -1 = 1$

⑥ a_9; $\frac{1}{2}, \frac{1}{4}, \frac{1}{8} \ldots$ $a\frac{1}{2}$ $r = \frac{1}{2}$

$a_9 = \frac{1}{2} \cdot \frac{1}{2}^8 = \frac{1}{2} \cdot \frac{1}{256} = \frac{1}{512}$

⑧ a_6; $1, -\sqrt{2}, 2$ $a = 1$ $r = -\sqrt{2}$

$a_6 =$ $-\sqrt{2}^{64} = -\sqrt{2}^5 = -2^{2\frac{1}{2}} = -4\sqrt{2}$

⑩ $r = \frac{4}{3}$, $a_{10} = \frac{16}{9}$ find a $16/9 = a(\frac{4}{3})^9 = a$ $a(\frac{4}{3})^7 = 1$

$a = (\frac{3}{4})^7$

$a = \frac{2187}{16384}$

$\frac{16}{9} = (\frac{4}{3})^9 \cdot a$

$\frac{16}{9} = a \frac{262141}{19683}$

OK

729
3
2187
6561
19683

9 sec - 225

15 sec - 725

20 sec - 1225

13 sec - unk

18 sec - 20 unk

$F_c = \frac{m 4\pi^2 R}{T^2}$

10 sec 22

.20661 = $\sqrt{\frac{10}{22}}$

r = .34 meters

40 cm = radius

g = 9.7

29.6 s

6.35×10^{-3} = washer

60 grams .065

.588 .455